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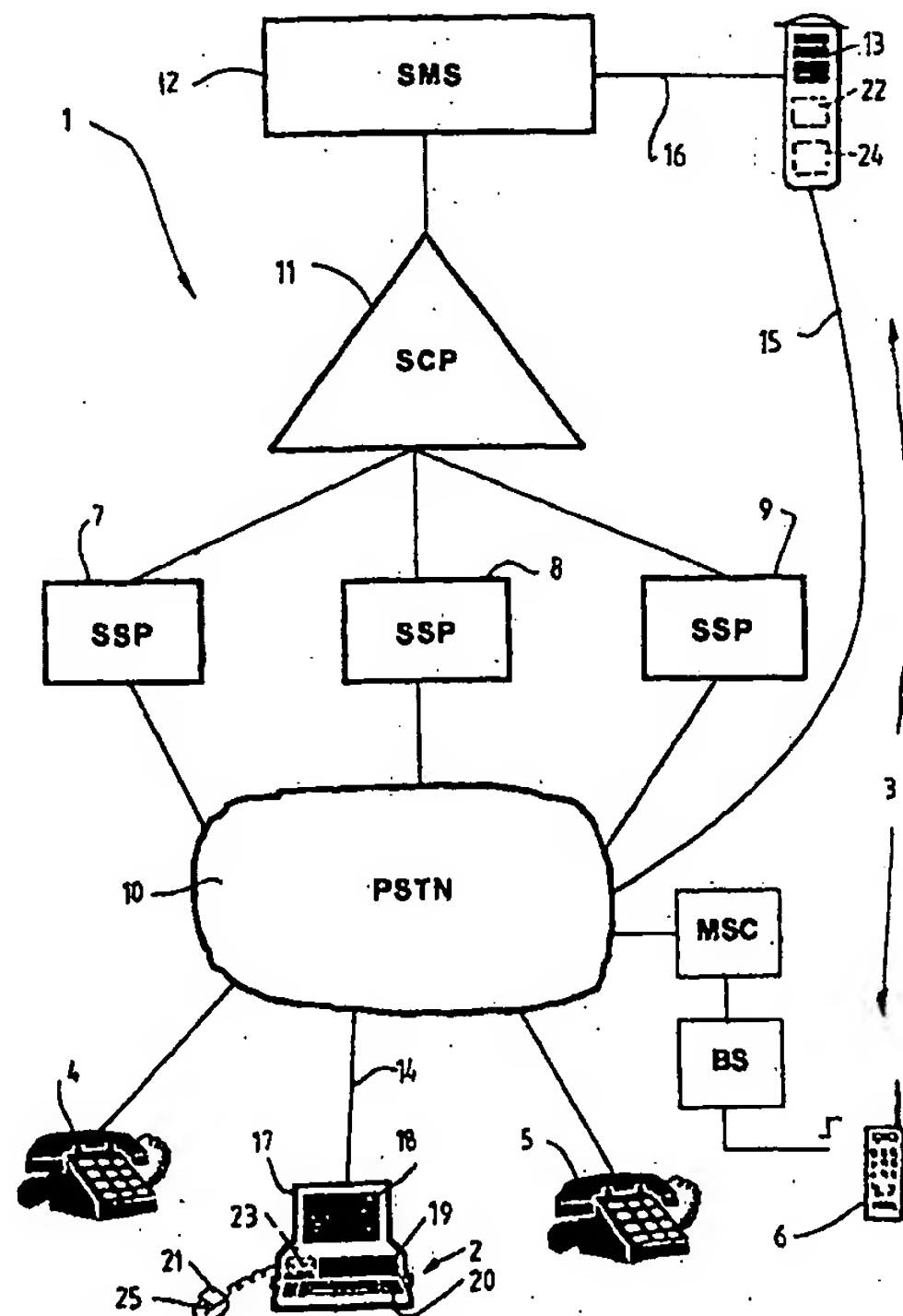
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

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(54) Title: **GRAPHICAL INTERACTIVE USER INTERFACE, NOTABLY FOR CONTROLLING TIME DEPENDENT TELEPHONE CALL FORWARDING**

(57) Abstract

A method of switching a communications signal originating from a calling terminal at a calling time to one of a plurality of receiving terminals in a communications system, the communications signal being originally intended for a first of the receiving terminals, the method including the steps of: a) establishing on a visual display unit (18) at least one visually distinct area (54-60) representative of a distinct time period, the area having a first area boundary (61) corresponding to a first time and a second area boundary (62) corresponding to a second time; b) creating within one or more of the visually distinct areas (54-60) at least one visually distinct zone (63-67) representative of a continuous time duration, the at least one zone being associated with a second of the receiving terminals and having a first zone boundary corresponding to a start time and a second zone boundary corresponding to a stop time, c) selectively controlling the position of the first zone boundary and the second zone boundary within the one or more visually distinct areas, and d) switching the communications signal from the calling terminal to the second receiving terminal if the calling time is after the start time and before the stop time.



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**GRAPHICAL INTERACTIVE USER INTERFACE, NOTABLY FOR  
CONTROLLING TIME DEPENDENT TELEPHONE CALL FORWARDING**

This invention relates to the switching of a communication signal  
5 originating from a calling terminal to one of a plurality of receiving terminals in a  
communications system, and in particular, where the communications signal is  
originally intended for a first of the receiving terminals, but is forwarded to a  
second of the receiving terminals. The invention will be described with particular  
reference to its application in the controlling of time dependent telephone call  
10 forwarding applications, but it is to be understood that the invention is not limited  
to that application.

Despite the general availability of numerous telephone central exchange  
provided functions, such as "call-forwarding", the establishment and use of such  
15 functions can often be complicated, time consuming and tedious. For example,  
the function of "call-forwarding" involves the completion of telephone calls from a  
calling party to a called party at a location different from the "normal" location at  
which calls to that party terminate. Provision is made for a user of such a function  
to enter and store the telephone number or numbers to which calls are to be  
20 forwarded, and the times between which the call-forwarding function is to be  
operative, in an intelligent portion of the telecommunications network to which  
various telecommunications terminals of the user are connected.

Currently, a user wishing to use a call-forwarding function must enter and  
25 maintain this information by placing a telephone call to a network operator and  
requesting that the operator enter the various start and stop times, as well as the  
various telephone numbers to which calls are to be diverted, into the intelligent  
portion of the network. Alternatively, the network operator may be replaced by a  
voice simulation device to which a user must respond by entering the required  
30 information via the key pad of the telephone device which the user is calling.

Such methods of entering and maintaining customer profile information either require the entry of complex, difficult to remember telephone key sequences from the telephone instrument, or require the telephone service provider to provide a number of network operators which is not only costly, but results in the entry and maintenance of such information being very time consuming.

There therefore exists a need for a convenient and simple way in which a user of a telephone service such as "call-forwarding" to enter and maintain the information required for the service to operate in accordance with their needs.

An object of the present invention is to provide such a simple and convenient manner for entering and maintaining customer profile information in intelligent network services previously described.

With this in mind, one aspect of the present invention provides a method of switching a communications signal originating from a calling terminal at a calling time to one of a plurality of receiving terminals in a communications system, the communications signal being originally intended for a first of the receiving terminals, the method including the steps of:

(a) establishing a visual display at least one visually distinct area representative of a distinct time period, the area having a first area boundary corresponding to a first time and a second area boundary corresponding to a second time,

(b) creating within one or more of the visually distinct areas at least one visually distinct zone representative of a continuous time duration, the at least one zone being associated with a second of the receiving terminals and having a first zone boundary corresponding to a start time and a second zone boundary corresponding to a stop time,

(c) selectively controlling the position of the first zone boundary and the second zone boundary within the one or more visually distinct areas, and

(d) switching the communications signal from the calling terminal to the second receiving terminal if the calling time is after the start time and before the stop time.

Such a method provides a graphical user interface which enables a user of "call-forwarding" and like telephone services to easily and conveniently manage their own customer profile without requiring the intervention of a network operator or the use of complex telephone key sequences.

Conveniently, step (c) may include the step of displacing at least a portion of the at least one zone to a new position within the one or more visually distinct areas to thereby automatically set one or both of the start time and the stop time.

The portion may be displaced by displacing a visual indicator on the visual display to a desired position, and causing the portion to be displaced as a function of the visual indicator displacement.

Alternatively, step (c) may include the step of setting one or both of the start time and the stop time in a data field, and automatically adjusting the position of the first zone boundary and the second zone boundary to correspond to the start time and stop time. One or both of the start time and stop time may be at least partially selected from one or more menus of pre-defined choices displayed on the visual display.

The method of switching a communications signal may include the step of selecting the identity of the second receiving terminal associated with the at least one zone from amongst a pre-defined group of receiving terminals. The identity



of that second receiving terminal may conveniently be selected from a menu of pre-defined choices displayed on the visual display.

Two or more visually distinct zones may be created within the one or more visually distinct areas, each zone being representative of a distinct, continuous time duration. Furthermore, each zone may be associated with a separate receiving terminal.

Each visually distinct area may be representative of a time period, for example, of twenty-four hours. There may be two or more visually distinct areas which are established on the visual display. Each visually distinct area may be displayed in the form of a bar chart.

Another aspect of the present invention provides a computer program for controlling the operation of a control station, the control station including a visual display unit and being for use in a communications system, the communications system being operable to switch a communications signal originating from a calling terminal at a calling time to one of a plurality of receiving terminals in a communications system, the communications signal being originally intended for a first of the receiving terminals, the computer program comprising the steps of:

(a) establishing on the visual display unit at least one visually distinct area representative of a distinct time period, the area having a first area boundary corresponding to a first time and a second area boundary corresponding to a second time,

(b) enabling the creation, by a user, within one or more of the visually distinct areas at least one visually distinct zone representative of a continuous time duration, the at least one zone being associated with a second of the receiving terminals and having a first zone boundary corresponding to a start time and a second zone boundary corresponding to a stop time,

(c) enabling the selective control, by the user, of the position of the first zone boundary and the second zone boundary within the one or more visually distinct areas, and

(d) enabling the user to send signals representative of the start time, stop time and the identity of one or more of the plurality of receiving terminals to the communications system, so that the communications system can act to switch the communications signal from the calling terminal to the second receiving terminal if the calling time is after the start time and before the stop time.

10 Step (c) of the computer program may include the step of enabling the user to displace at least a portion of the at least one zone to a new position within the one or more visually distinct areas to thereby automatically set one or both of the start time and the stop time. The portion may be displaced by displacing a visual indicator on the visual display to a desired position, and causing the portion to be  
15 displaced as a function of the visual indicator displacement.

Alternatively, step (c) of the computer program may include the step of enabling the user to set one or both of the start time and stop time in a data field, the computer program automatically adjusting the position of the first zone  
20 boundary and the second zone boundary to correspond to the start time and the stop time. One or both of the start time and stop time may be at least partially selected from one or more menus of pre-defined choices displayed on the visual display.

25 The computer program may include the step of enabling the user to select the identity of the second receiving terminal associated with the at least one zone from amongst a pre-defined group of receiving terminals. The identity of the second receiving terminal may be selected from a menu of pre-defined choices displayed on the visual display.



The computer program may provide for the creation of two or more visually distinct zones within one or more visually distinct areas, each zone being representative of a distinct, continuous time duration. Each zone may be associated with separate receiving terminals.

5

Yet another aspect of the invention provides a communications network including a communications system operable to switch a communications signal originating from a calling terminal at a calling time to one of a plurality of receiving terminals, the communications signal being originally intended for a first  
10 of the receiving terminals, and a control station for controlling the operation of the communications system, the control station including

a visual display unit,

the communications system including

display means for establishing on the visual display unit at least one  
15 visually distinct area representative of a distinct time period, the area having a first area boundary corresponding to a first time and a second area boundary corresponding to a second time,

creating means for creating within one or more of the visually distinct areas at least one visually distinct zone representative of a continuous time duration, the  
20 at least one zone being associated with a second of the receiving terminals and having a first zone boundary corresponding to a start time and a second zone boundary corresponding to a stop time,

setting means for selectively controlling the position of the first zone boundary and the second zone boundary within one or more of the visually distinct  
25 areas,

sending means for sending signals representative of the start time, stop time and the identity of one or more of the plurality of receiving terminals to the communications system, and

switching means to switch the communications signal from the calling  
30 terminal to the second receiving terminal if the calling time is after the start time and before the stop time.

The setting means may act to enable the user-operable displacement of at least a portion of the at least one zone to a new position within the one or more visually distinct areas to thereby automatically set one or both of the start time and stop time. The portion of the at least one zone may be displaced by displacing a visual indicator on the visual display to a desired position, and causing the portion to be displaced as a function of the visual indicator displacement.

The setting means may act to enable the user operable setting of one or both of the start time and stop time in a data field, the control station automatically adjusting the position of the first zone boundary and the second zone boundary to correspond to the start time and stop time. One or both of the start time and stop time may be at least partially selected from one or more menus of pre-defined choices displayed on the visual display.

The communications network may further include means for selecting the identity of the second receiving terminal associated with the at least one zone from amongst a pre-defined group of receiving terminals. The identity of the second receiving terminal may be selected from a menu of pre-defined choices displayed on the visual display.

The following description refers in more detail to the various features of the method of switching a communications signal, computer program for controlling the operation of a control station, and communications network of the present invention. To facilitate an understanding of the invention, reference is made in the description to the accompanying drawings where the various aspects of the present invention are illustrated in a preferred embodiment. It is to be understood however that the present invention is not limited to the embodiment illustrated in the drawings.

30

In the drawings:

Figure 1 is a schematic diagram illustrating one embodiment of a communications network in accordance with the present invention; and

5        Figures 2 to 9 are diagrams showing the visual information displayed on the visual display unit of the control station of the communications network of Figure 1 during performance of the method of switching a communications signal, and the operation of the computer program for controlling the operation of the control station, in accordance with the present invention.

10

Referring now to Figure 1, there is shown a communications network 1 including a control station 2 and a communications system 3 operable to switch a communications signal originating from a calling terminal 4 at a particular time, hereinafter called "calling time", to one of a plurality of receiving terminals 5 and 15 6. In this example, the receiving terminals 5 and 6 are respectively a PSTN telephone and a mobile telephone, but in other embodiments of the invention one or more of the receiving terminals may be a facsimile device, paging device, or other terminal adapted to receive video, audio or data signals from a remote terminal. In other embodiments, the communications system may include more 20 than two such receiving terminals.

The communications system 3, in this example, is constituted by an intelligent network containing a number of service switching points (SSP) 7, 8 and 9 each connected to a public telecommunications network such as a public 25 switched telephone network (PSTN) 10. Other suitable telecommunications networks include integrated service digital networks (ISDN), packet-switched public data networks (PSPDN) and mobile telecommunications networks. Each of the SSPs 7, 8 and 9 are connected to a service control point (SCP) 11 which contains service specific applications software and customer or subscriber records. 30 Each SSP reacts to specific service triggers and initiates queries to the SCP over a common channel signalling network, such as the signalling system number 7

(SS7) network. The SCP acts upon the query from the SSP and returns a message containing the data and instructions required to complete the service. A service management system (SMS) 12 is linked to the SCP and supports the administration of the user records within the SCP.

5

A service such as "call-forwarding" is implemented in an intelligent network by having the user load the SMS 12 with parameters defining the operation of the call-forwarding service, such as the start time at which the call-forwarding is to commence, the stop time at which the call-forwarding is to  
10 terminate, the destination number or numbers to which the telephone calls are to be diverted during operation of the call forwarding service, etc. These parameters are downloaded from the SMS 12 into the SCP 11, and are in turn delivered to each SSP 7, 8 and 9 connected to the SCP, so that each SSP is programmed with these parameters. During an activated call-forwarding service, that is to say, after  
15 the start time and before the stop time of the call-forwarding service, incoming calls originally intended for a particular telephone number are received by the SSPs and handled so that these calls are diverted to a different telephone number specified by the user.

20 The communications system 3 may include a server 13 maintained by a provider of "call-forwarding" and like functions, to enable the user to enter and maintain his user profile information defining the operation of the call-forwarding function for that user. The server 13 maintains a separate file (referenced 22 in Figure 1) for each such user, and provides access to these files via an internet or  
25 other suitable connection. As shown in Figure 1, the control station 2 may include a modem connecting the control station 2 to a telephone line 14 and, through the PSTN 10 to an internet service provider (not shown), which provides access to the server 13 via a telephone connection 16.

30 The control station 2 may be principally constituted by a personal computer or PC loaded with one or more computer programs to enable the user to interact

with the control station and thus control the operation of the communications system in the provision of the call-forwarding service. The PC includes a visual display unit 17 having a visual display 18, computing means 19 including a processing unit and associated volatile and non-volatile memories, a data entry  
5 device 20 such as a keyboard, and a mouse 21 or like means 4 controlling the position of a visual indicator on the visual display 18. In addition, the PC may be loaded with a first computer program 23, such a web browser, enabling the PC to access and interact with a second computer program 24 resident on the server 13. The second computer program 24 enables the user to access and modify  
10 information contained in his user profile 22, as will be described below.

Turning now to Figures 2 to 9, the operation of the control station 2 by the user to control of the communications system 3 will now be explained.

15 In order to access his user profile information 22 stored in the server 13, a user firstly establishes a connection between the control station 2 and an internet service provider (not shown). From there, the user launches the web browser program 23 stored in the control station 2 and accesses the computer program 24 in the server 13.

20

Upon the establishment of a connection with the server 13, the computer program 24 sends packets of data for visual reproduction to the control station 2, which data is interpreted by the web browser 23 and reconstructed for display on the visual display 18.

25

Initially, at step 30, the computer program 24, interacting with the web browser 23 displays information on the visual display 18 inviting the user to enter in the data fields 50 and 51 the telephone number of the terminal for which the call-forwarding function is to be used, and a security code. The computer program  
30 24 establishes on the visual display 18 a visual indicator 52. The position of this visual indicator on the visual display 18 may be altered by movement of the



mouse 21 across a support surface. Once the user's telephone number and security code have been entered, the user displaces the visual indicator to within the boundaries of an area 53 on the visual display 18. Actioning of a control button 25 on the mouse 21 causes the web browser 23 to submit the information entered in the data fields 51 and 51 to the server 13.

Once the computer program 24 has verified that the telephone number and security code correspond to information previously stored in the user information 22, a confirmation message is displayed on the visual display 18, and the user invited to continue with the entry or modification of his user profile information. At step 32, the user displaces the visual indicator 52 and actions the control button 25 on the mouse 21 to select the "time call-forwarding" service provided by the server 13.

At step 33, the computer program 24 establishes on the visual display 18 at least one visually distinct area representative of a distinct time period, the area having a first area boundary corresponding to a first time and a second area boundary corresponding to a second time. In this example, five visually distinct areas 54 to 60 are established, each being representative of a period of twenty-four hours. Each area has a first area boundary 61 corresponding to the start of the twenty-four hour period and a second area boundary 62 corresponding to the end of the twenty-four hour period.

At least one visually distinct zone representative of a continuous time duration is created within one or more of the visually distinct areas. In this example, as seen in step 34, five visually distinct zones 63 to 67 have been created, each representing a continuous time duration during which the call-forwarding function is to be enabled. Each zone 63 to 67 is associated with a telephone or other terminal to which calls initially intended for the user's "normal" telephone or terminal are to be diverted. Moreover, each zone has a first zone boundary corresponding to a start time and a second zone boundary corresponding



to a stop time. For example, the visually distinct zone 64 has a first zone boundary 68 corresponding to a start time and a second zone boundary 69 corresponding to a stop time.

5        Whilst each visually distinct area 54 to 60 shown in Figures 2 to 9 is displayed in the form of a rectangular bar chart, it is to be appreciated that these visually distinct areas may be represented in other ways. For example, each of the areas 54 to 60 may be represented as segments of a pie chart, each segment representing a twenty-four hour period within the week. Other arrangements will  
10    of course be possible.

      The program 24 enables the user to easily adjust the start and stop times at which the call-forwarding function is activated, by enabling the user to selectively control the position of the first zone boundary and the second zone boundary of  
15    each of the visually distinct zones created within one or more of the visually distinct areas 55 to 60. For example, if the user wishes to alter the start and stop times of the call-forwarding function associated with the visually distinct zone 24, the user firstly displaces the mouse 21 to bring the visual indicator 52 within the boundaries of the zone 64. Actioning the control button 25 causes that zone 64 to  
20    become activated.

      The position of the first zone boundary 68 and the second zone boundary 69 within the one or more visually distinct areas 54 to 60 may be selectively controlled in a variety of ways. According to a first embodiment of the invention,  
25    the program 24 enables a user to set one or both of the start and stop times in a data field, the computer program automatically adjusting the position of the first zone boundary 68 and second zone boundary 69 to correspond to the start and stop time. As seen in step 35, one or both of the start time and stop time may be at least partially selected from one or more menus of pre-defined choices displayed  
30    on the visual display 18. Accordingly, having firstly activated the zone 64 in step 34, the user brings the visual indicator 52 over a data field 70, which when

activated, transforms into a drop-down menu 71. From this drop-down menu, the user is able to select the day of the week at which the call-forwarding function associated with the zone 64 is to terminate. At step 36, the user brings the visual indicator 52 over the data field corresponding to the desired day of the week in the drop-down menu 71 and activates that field.

At step 37, the position of the second zone boundary 69 is automatically adjusted to correspond to the selection made in step 36.

The user then brings the visual indicator 52 over a second data field 72, which, when activated by the user, is transformed into the drop-down menu 73. Once again, the user is able to select the day of the week on which the call-forwarding service associated with the zone 64 is to commence operation, as seen in step 39. At step 40, the computer program automatically adjusts the position of the first zone boundary 68 to correspond to the selected day of the week at which the call-forwarding service is to commence.

Similarly, the time of day at which the call-forwarding function associated with the zone 64 is to commence may be selected by the entry of data into the data field 74 and the time of day at which that call-forwarding service is to terminate may be selected from the entry of data into the data field 75. These data fields may be of the sort which enable the direct entry of data via use of numerical keys on the keyboard 20 and/or may allow the selection of a time of day through the use of scrolling arrows 76 to 79. Various other techniques and arrangements will be envisaged by a skilled person in this field. As with the selection of a desired day of the week, the computer program 24 automatically adjusts the position of the first zone boundary 68 and the second zone boundary 69 to correspond to the selected start time and stop time of the call-forwarding service associated with the zone 64.

Alternatively, the position of the first zone boundary and the second zone boundary of each visually distinct zone may be selectively controlled by displacing at least a portion of each zone to a new position within the one or more visually distinct areas. At step 41, the position of the first zone boundary 80 of the visually distinct zone 66 may be selectively controlled by use of the mouse 21 to bring the visual indicator over that zone boundary 80. The form of the zone boundary 80 may change to indicate that the zone boundary may then be displaced by actuation of the control button 25 when the visual indicator 52 is over that zone boundary 80. Accordingly, in step 42, the control button 25 is actuated and the mouse 21 displaced to the left, causing the selected portion of the zone 66 (i.e. the first zone boundary 80) to be displaced as a function of the visual indicator displacement to a new position.

Similarly, the second zone boundary 82 of the visually distinct zone 66 may be selectively controlled by a similar operation to a new position within any of the visually distinct areas 64 to 60.

The computer program 24 may also enable the selection of the identity of the terminal to which telephone calls are to be forwarded when the call forwarding service associated with each of the zones 63 to 67 is operable. For example, referring to step 43, the terminal to which telephone calls will be directed when the call-forwarding service associated with the zone 66 is operable may be selected by firstly activating that zone (in the manner previously described) and then selecting the identity of the telephone to which calls are to be directed from amongst a pre-defined group of terminals. The identity of that terminal may conveniently be selected from a menu of pre-defined choices displayed on the visual display 18. Conveniently, a user may activate a data field 83, which then transforms into a drop-down menu 84. At step 44, the user is able to select one of the menu items and thus, at step 45, determine the identity of the telephone or other terminal to which telephone calls will be deviated during the operation of the call-forwarding service associated with the zone 66.

At step 46, the user sends signals representative of the start time, stop time and the identity of the receiving terminals selected to the server 13 within the communications system 3, so that the communications system can act to switch  
5 communications signals made from a third party to the terminal defined by the user if the calling time is after the start time and before the stop time of a particular call-forwarding service just defined by the user. Accordingly, the computer program 24 is operable to cause the server 13 to forward this information to the SMS 12 for use in the completion of the call forwarding services as programmed  
10 by the user.

In step 47, the user may be provided with a facility to enter and store the telephone number or other terminal identifier associated with each terminal to which the user may desire telephone calls to be diverted.

15

Finally, it is to be understood that various modifications and or additions may be made to the method, computer program or computer network without departing from the ambit of the present invention.

**CLAIMS**

1. A method of switching a communications signal originating from a calling terminal at a calling time to one of a plurality of receiving terminals in a communications system, the communications signal being originally intended for a first of the receiving terminals, the method including the steps of:

(a) establishing a visual display at least one visually distinct area representative of a distinct time period, the area having a first area boundary corresponding to a first time and a second area boundary corresponding to a second time,

(b) creating within one or more of the visually distinct areas at least one visually distinct zone representative of a continuous time duration, the at least one zone being associated with a second of the receiving terminals and having a first zone boundary corresponding to a start time and a second zone boundary corresponding to a stop time,

(c) selectively controlling the position of the first zone boundary and the second zone boundary within the one or more visually distinct areas, and

(d) switching the communications signal from the calling terminal to the second receiving terminal if the calling time is after the start time and before the stop time.

2. A method according to claim 1, wherein step (c) includes the step of displacing at least a portion of the at least one zone to a new position within the one or more visually distinct areas to thereby automatically set one or both of the start time and the stop time.

3. A method according to claim 2, wherein the portion is displaced by displacing a visual indicator on the visual display to a desired position, and causing the portion to be displaced as a function of the visual indicator displacement.

4. A method according to claim 1, wherein step (c) includes the step of setting one or both of the start time and the stop time in a data field, and automatically adjusting the position of the first zone boundary and the second zone boundary to correspond to the start time and stop time.
5. A method according to claim 4, wherein one or both of the start time and stop time are at least partially selected from one or more menus of pre-defined choices displayed on the visual display.
- 10 6. A method according to any one of the preceding claims, and further including the step of selecting the identity of the second receiving terminal associated with the at least one zone from amongst a pre-defined group of receiving terminals.
- 15 7. A method according to claim 6, wherein the identity of said second receiving terminal is selected from a menu of pre-defined choices displayed on the visual display.
- 20 8. A method according to any one of the preceding claims, wherein two or more visually distinct zones are created within the one or more visually distinct areas, each zone being representative of a distinct, continuous time duration.
9. A method according to claims 8, wherein each zone is associated with a separate receiving terminal.
- 25 10. A method according either one of claims 8 or 9, wherein each visually distinct area is representative a a time period.
11. A method according to claim 10, wherein two or more visually distinct areas are established on the visual display.



12. A method according to claim 11, wherein each visually distinct area is displayed in the form of a bar chart.

5 13. A computer program for controlling the operation of a control station, the control station including a visual display unit and being for use in a communications system, the communications system being operable to switch a communications signal originating from a calling terminal at a calling time to one of a plurality of receiving terminals in a communications system, the communications signal being originally  
10 intended for a first of the receiving terminals, the computer program acting to:

(a) establish on the visual display unit at least one visually distinct area representative of a distinct time period, the area having a first area boundary corresponding to a first time and a second area boundary corresponding to a second time,

15 (b) enable the creation, by a user, within one or more of the visually distinct areas at least one visually distinct zone representative of a continuous time duration, the at least one zone being associated with a second of the receiving terminals and having a first zone boundary corresponding to a start time and a second zone boundary corresponding to a stop time,

20 (c) enable the selective control, by the user, of the position of the first zone boundary and the second zone boundary within the one or more visually distinct areas, and

(d) enable the user to send signals representative of the start time, stop time and the identity of one or more of the plurality of receiving terminals to the  
25 communications system, so that the communications system can act to switch the communications signal from the calling terminal to the second receiving terminal if the calling time is after the start time and before the stop time.

14. A computer program according to claim 13, wherein the computer program  
30 further acts to enable the user to displace at least a portion of the at least one zone to a

new position within the one or more visually distinct areas to thereby automatically set one or both of the start time and the stop time.

15. A computer program according to claim 14, wherein the portion is displaced by  
5 displacing a visual indicator on the visual display to a desired position, and causing the portion to be displaced as a function of the visual indicator displacement.

16. A computer program according to claim 13, wherein the computer program  
acts to enable the user to set one or both of the start time and stop time in a data field,  
10 the computer program automatically adjusting the position of the first zone boundary and the second zone boundary to correspond to the start time and the stop time.

17. A computer program according to claim 16, wherein one or both of the start  
time and stop time may be at least partially selected from one or more menus of pre-  
15 defined choices displayed on the visual display.

18. A computer program according to any one of claims 13 to 17, wherein the  
computer program acts to enable the user to select the identity of second receiving  
terminal associated with the at least one zone from amongst a pre-defined group of  
20 receiving terminals.

19. A computer program according to claim 18, wherein the identity of the second  
receiving terminal may be selected from a menu of pre-defined choices displayed on  
the visual display.

25

20. A computer program according to any one of claims 13 to 19, wherein the  
computer program provides for the creation of two or more visually distinct zones  
within one or more visually distinct areas, each zone being representative of a distinct,  
continuous time duration.

30

21. A computer program according to claim 20, wherein each zone is associated with separate receiving terminals.

22. A communications network including a communications system operable to  
5 switch a communications signal originating from a calling terminal at a calling time to one of a plurality of receiving terminals, the communications signal being originally intended for a first of the receiving terminals, and a control station for controlling the operation of the communications system, the control station including

a visual display unit,

10 the communications system including

display means for establishing on the visual display unit at least one visually distinct area representative of a distinct time period, the area having a first area boundary corresponding to a first time and a second area boundary corresponding to a second time,

15 creating means for creating within one or more of the visually distinct areas at least one visually distinct zone representative of a continuous time duration, the at least one zone being associated with a second of the receiving terminals and having a first zone boundary corresponding to a start time and a second zone boundary corresponding to a stop time,

20 setting means for selectively controlling the position of the first zone boundary and the second zone boundary within one or more of the visually distinct areas,

sending means for sending signals representative of the start time, stop time and the identity of one or more of the plurality of receiving terminals to the communications system, and

25 switching means to switch the communications signal from the calling terminal to the second receiving terminal if the calling time is after the start time and before the stop time.

23. A communications network according to claim 27, wherein the setting means  
30 acts to enable the user-operable displacement of at least a portion of the at least one

zone to a new position within the one or more visually distinct areas to thereby automatically set one or both of the start time and stop time.

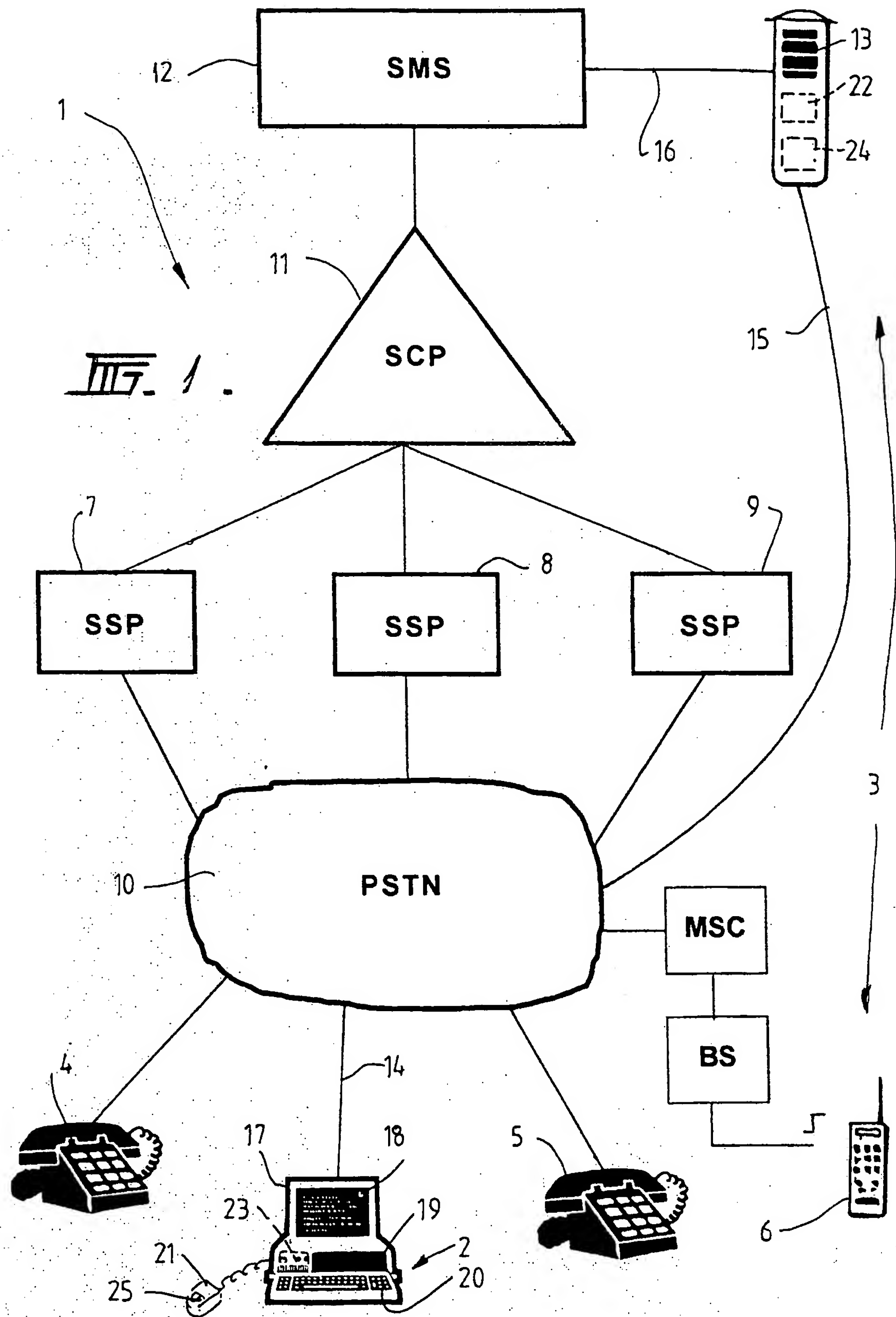
24. A communications network according to claim 23, wherein the portion of the at  
5 least one zone is displaced by displacing a visual indicator on the visual display to a desired position, and causing the portion to be displaced as a function of the visual indicator displacement.

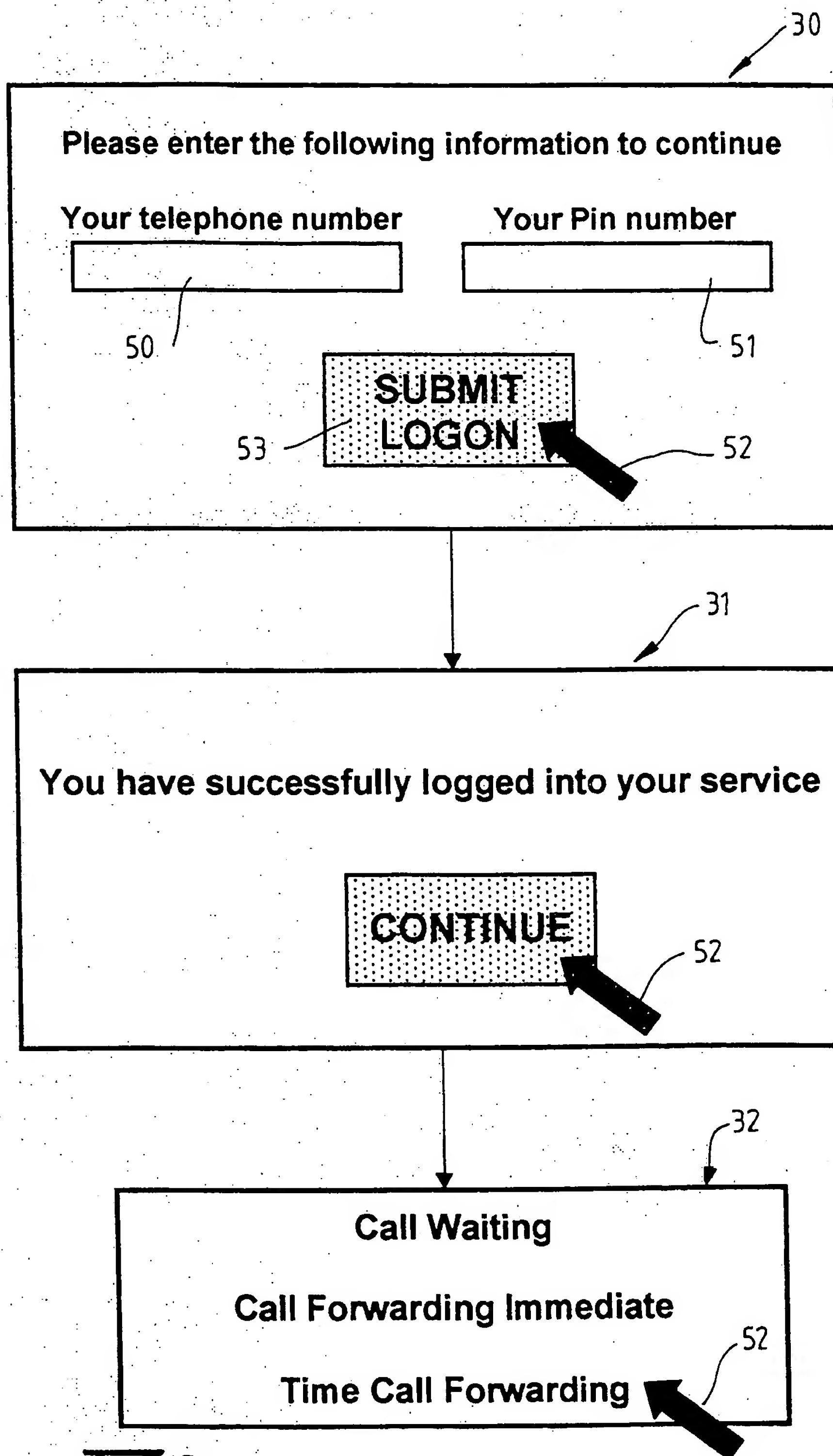
25. A communications network according to any one of claims 22 to 24, wherein  
10 the setting means acts to enable the user operable setting of one or both of the start time and stop time in a data field, the control station automatically adjusting the position of the first zone boundary and the second zone boundary to correspond to the start time and stop time.

15 26. A communications network according to claim 25, wherein one or both of the start time and stop time are at least partially selected from one or more menus of pre-defined choices displayed on the visual display.

27. A communications network according to any one of claims 22 to 26, and  
20 further including means for selecting the identity of the second receiving terminal associated with the at least one zone from amongst a pre-defined group of receiving terminals.

28. A communications network according to claim 27, wherein the identity of the  
25 second receiving terminal is selected from a menu of pre-defined choices displayed on the visual display.



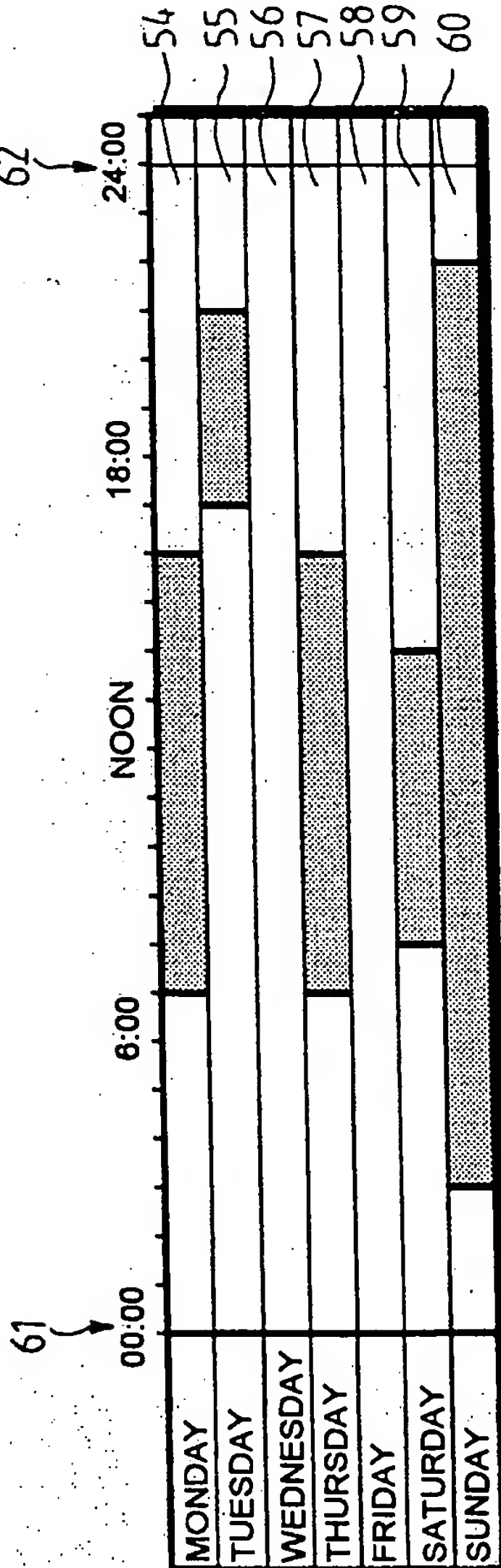
**FIG. 2.**



3/18

33

Your current weekly "Time Call Forwarding" pattern has been displayed below.  
Please make the necessary adjustments and "SEND" the information to your service.



Call forwarding is

ON

PHONE LIST

CLEAR  
SELECTION

SEND

Forward to

MOBILE

Finish Forwarding

MONDAY 23:51

Start Forwarding

MONDAY 18:45

115.3.1

34

Your current weekly "Time Call Forwarding" pattern has been displayed below.  
Please make the necessary adjustments and "SEND" the information to your service.



Call forwarding is

ON

PHONE LIST

CLEAR  
SELECTION

SEND

Forward to

Finish Forwarding

Start Forwarding

III-3.2

35

Call forwarding is **ON**

**PHONE LIST**

**CLEAR SELECTION**

**SEND**

	00:00	6:00	NOON	18:00	24:00
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					
SUNDAY					

Start Forwarding ☐ ☐

Finish Forwarding ☐ ☐

Forward to ☐

52

71

MONDAY  
TUESDAY  
WEDNESDAY  
THURSDAY  
FRIDAY  
SATURDAY  
SUNDAY

III-4.1

36

Call forwarding is **ON**

**PHONE LIST**

**CLEAR SELECTION**

**SEND**

→

	00:00	6:00	NOON	18:00	24:00
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					
SUNDAY					

Start Forwarding ☐ ☐

Finish Forwarding ☐ ☐

Forward to ☐

71

52

MONDAY
TUESDAY
WEDNESDAY
THURSDAY
FRIDAY
SATURDAY
SUNDAY

→

Fig. 4.2

37

Call forwarding is **ON**

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
<div style="display: flex; justify-content: space-between;"> <div>6:00</div> <div>NOON</div> <div>18:00</div> <div>24:00</div> </div>						

68

69

PHONE LIST

CLEAR SELECTION

SEND

Start Forwarding

☐ ☐ ☐

Finish Forwarding

☐ ☐ ☐

Forward to

☐ ☐ ☐

III.5.1.

38

64

69

68

24:00

18:00

NOON

6:00

00:00

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

SUNDAY

Call forwarding is **ON**

PHONE LIST

CLEAR SELECTION

SEND

Forward to

Finish Forwarding

Start Forwarding

72

52

73

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

SUNDAY

III-5.2



9/18

39

	00:00	6:00	NOON	18:00	24:00
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					
SUNDAY					

Call forwarding is ON

PHONE LIST

CLEAR  
SELECTION

SEND

Start Forwarding

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

SUNDAY

Finish Forwarding

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

FRIDAY

SATURDAY

SUNDAY

Forward to

MONDAY

TUESDAY

WEDNESDAY

THURSDAY

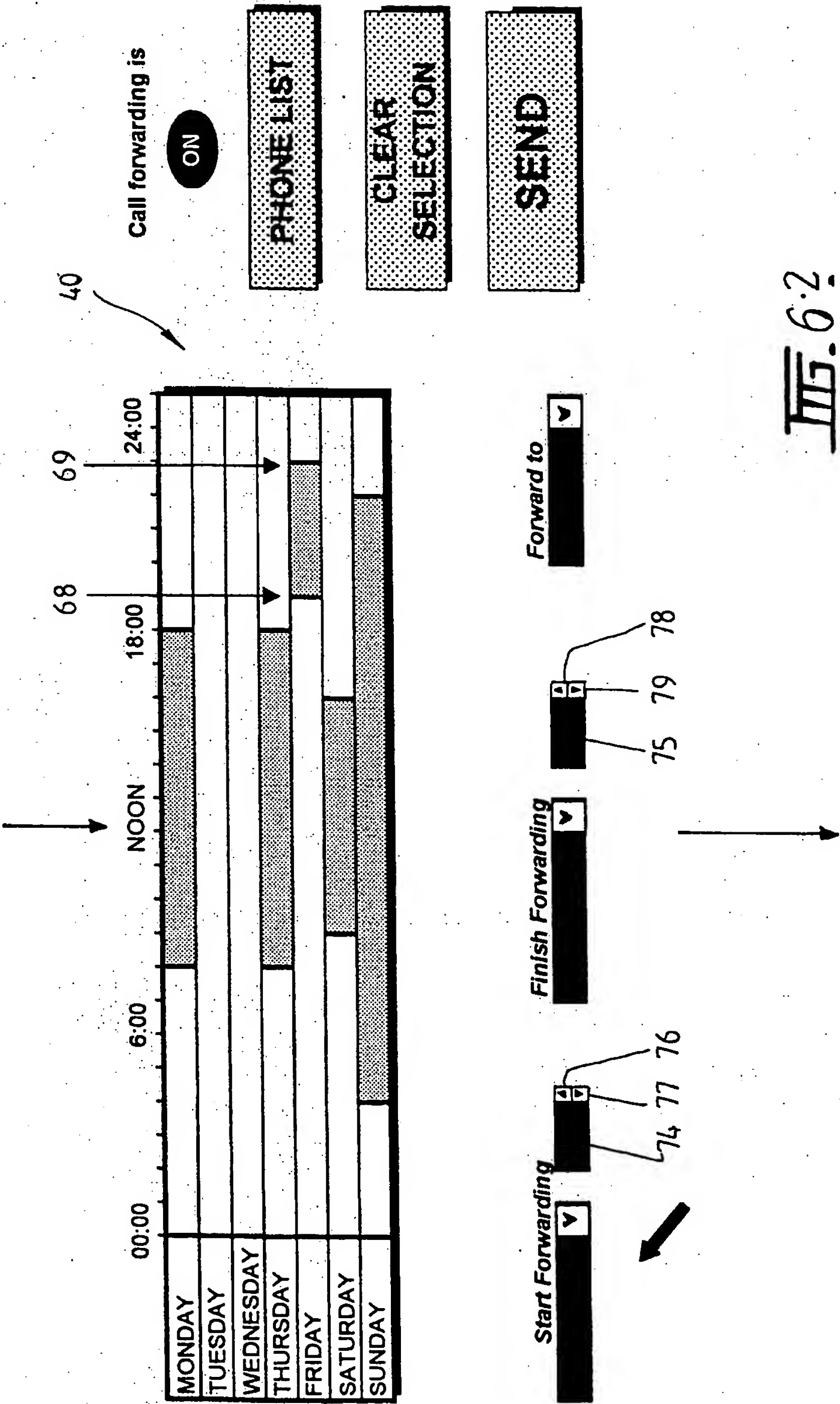
FRIDAY

SATURDAY

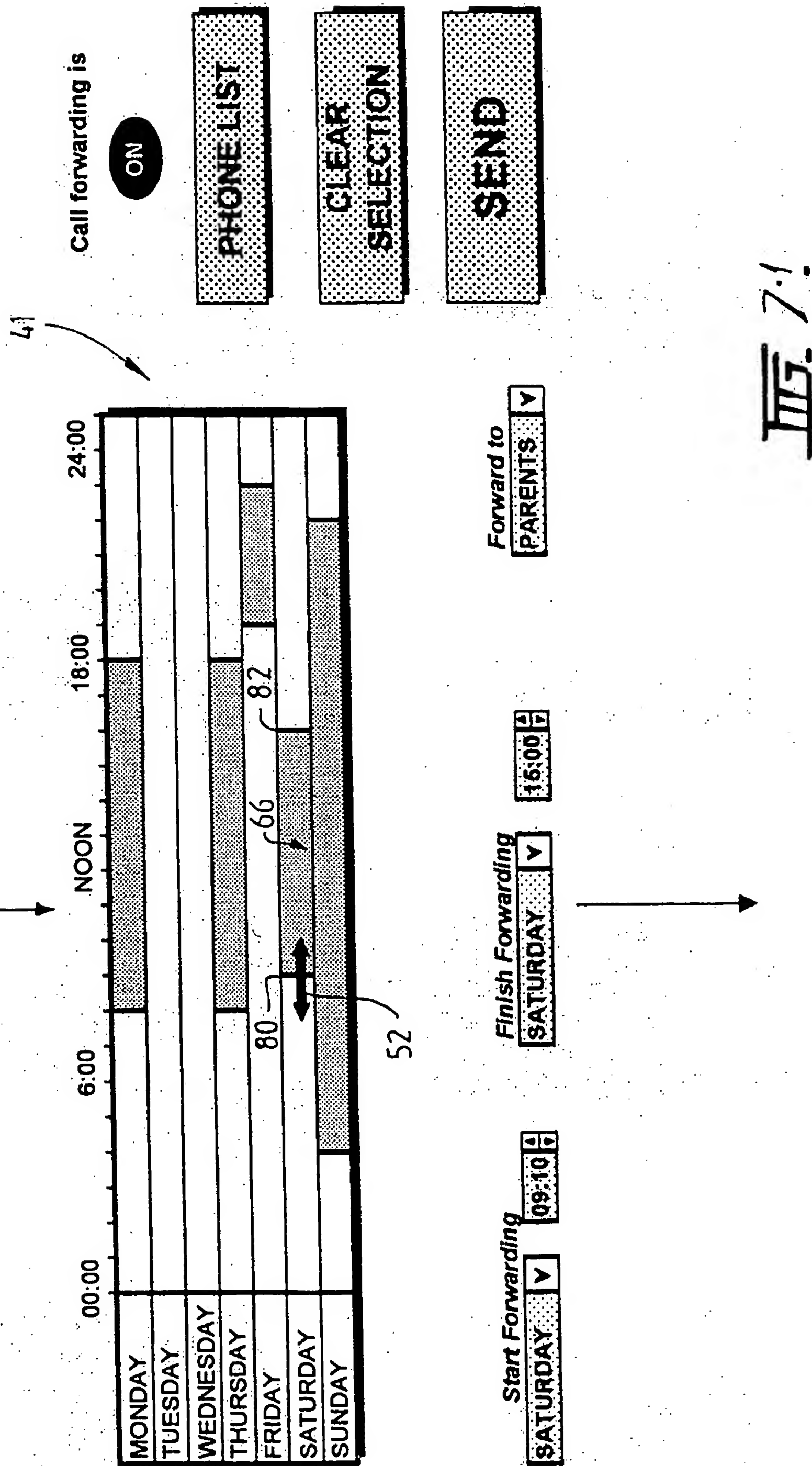
SUNDAY

52

III-6.1



11/18



42

Call forwarding is  
**ON**

PHONE LIST

CLEAR  
SELECTION

SEND

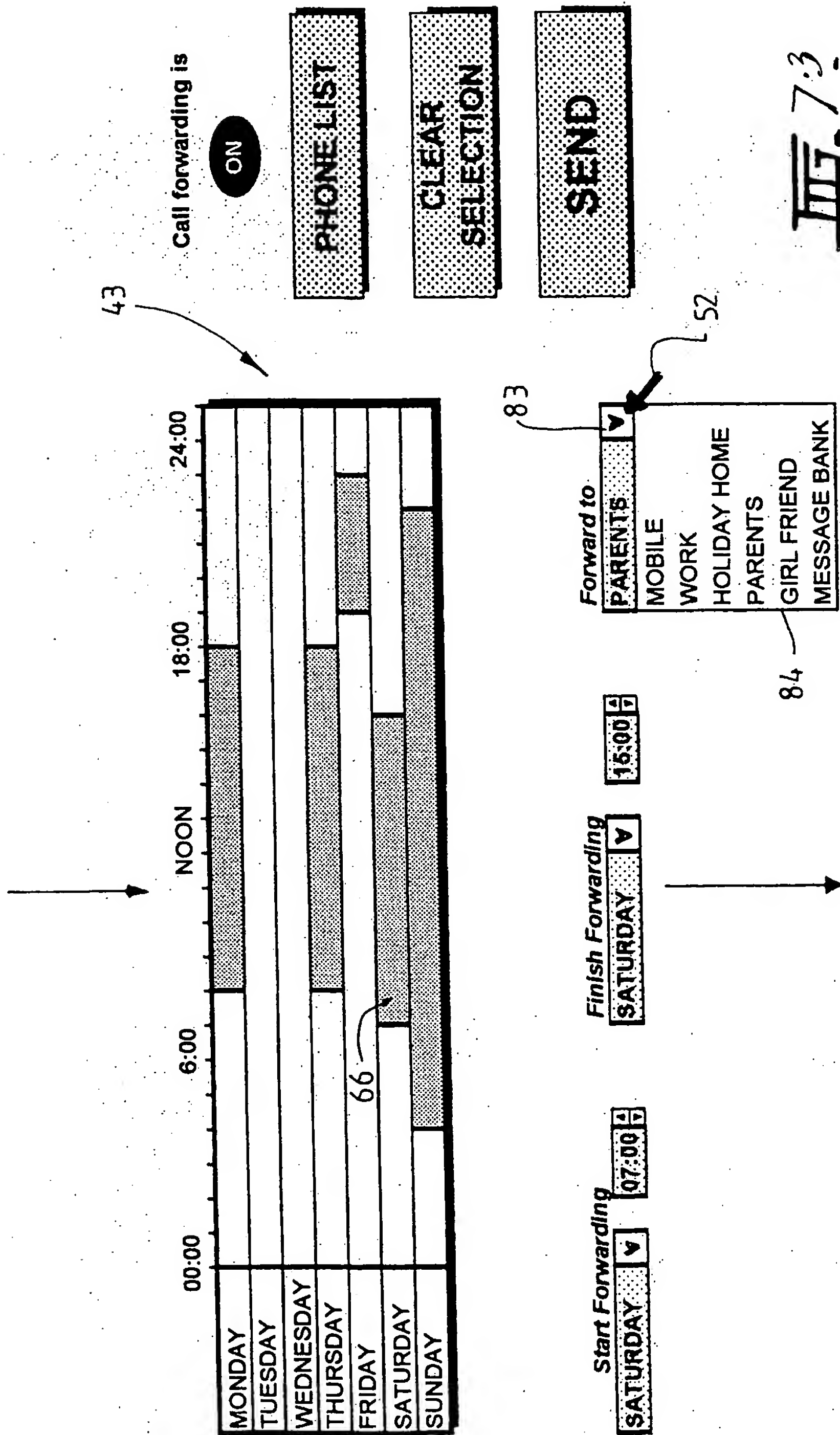
	00:00	6:00	NOON	18:00	24:00
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					
SUNDAY					

Start Forwarding  
SATURDAY ☒ 07:00

Finish Forwarding  
SATURDAY ☒ 15:00

Forward to  
PARENTS ☒

III-7.2



44

MONDAY	00:00	6:00	NOON	18:00	24:00
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					
SUNDAY					

66

Call forwarding is **ON**

**PHONE LIST**

**CLEAR SELECTION**

**SEND**

Start Forwarding

**SATURDAY** **V** **07:00**

Finish Forwarding

**SATURDAY** **V** **16:00**

Forward to

**GIRL FRIEND** **V**

MOBILE

WORK

HOLIDAY HOME

PARENTS

**GIRL FRIEND** **V**

MESSAGE BANK

52

117.8.1



45

Call forwarding is **ON**

**PHONE LIST**

**CLEAR SELECTION**

**SEND**

Forward to **GIRLFRIEND**

Finish Forwarding **SATURDAY**

Start Forwarding **SATURDAY**

	00:00	6:00	NOON	18:00	24:00
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					
SUNDAY					

III-8.2

46 →

	00:00	6:00	NOON	18:00	24:00
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					
SUNDAY					

Call forwarding is **ON**

**PHONE LIST**

**CLEAR SELECTION**

**SEND** →

Start Forwarding

SATURDAY ☒ 07:00

Finish Forwarding

SATURDAY ☒ 16:00

Forward to

GIRLFRIEND ▼

III-9.1

47

Call forwarding is **ON**

**PHONE LIST**

**CLEAR SELECTION**

**SEND**

	00:00	6:00	NOON	18:00	24:00
MONDAY					
TUESDAY					
WEDNESDAY					
THURSDAY					
FRIDAY					
SATURDAY					
SUNDAY					

Start Forwarding ☒ SATURDAY 07:00



















Finish Forwarding ☒ SATURDAY 15:00

Forward to ☒ FRIEND

III-9-2

48

Description Telephone Number Colour

MOBILE	0414 123 456		
WORK	9301 321 765		
HOLIDAY HOME	9746 458 93		
PARENTS	9237 987 743		
GIRL FRIEND	9237 885 321		
MESSAGE BANK	9888 999 999		
			
			
			
			
			
			

CLEAR SELECTION

STORE

PREVIOUS SCREEN

III-9.3

## INTERNATIONAL SEARCH REPORT

International application No.  
PCT/AU 99/00646

<b>A. CLASSIFICATION OF SUBJECT MATTER</b>																						
Int Cl <sup>6</sup> : H04Q 7/14																						
According to International Patent Classification (IPC) or to both national classification and IPC																						
<b>B. FIELDS SEARCHED</b>																						
Minimum documentation searched (classification system followed by classification symbols) IPC: H04M/IC; H04Q/IC; G06F 17/60; G09G 5/14																						
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched																						
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) WPAT: FORWARD AND DISPLAY AND (TIME OR PERIOD) INTERNET: CALL AND FORWARD AND CONTROL AND TIME																						
<b>C. DOCUMENTS CONSIDERED TO BE RELEVANT</b>																						
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.																				
A	US 5 610 970 (Fuller R.M. et al ) 11 March 1997 Column 1 lines 25 to 58 Column 57 line 59 to column 58 line 65 Figures 7,8 and 43	1 to 28																				
A	US 5 592 541 (Fleischer H.C. et al) 7 January 1997 Column 4 lines 12 to 14 Column 7 lines 58 to 60, figure 1 Column 14 lines 44 to 64	1 to 28																				
<input type="checkbox"/> Further documents are listed in the continuation of Box C <input checked="" type="checkbox"/> See patent family annex																						
<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A"</td> <td>document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T"</td> <td>later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E"</td> <td>earlier application or patent but published on or after the international filing date</td> <td>"X"</td> <td>document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L"</td> <td>document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y"</td> <td>document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O"</td> <td>document referring to an oral disclosure, use, exhibition or other means</td> <td>"&amp;"</td> <td>document member of the same patent family</td> </tr> <tr> <td>"P"</td> <td>document published prior to the international filing date but later than the priority date claimed</td> <td></td> <td></td> </tr> </table>			"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family	"P"	document published prior to the international filing date but later than the priority date claimed		
"A"	document defining the general state of the art which is not considered to be of particular relevance	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention																			
"E"	earlier application or patent but published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone																			
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art																			
"O"	document referring to an oral disclosure, use, exhibition or other means	"&"	document member of the same patent family																			
"P"	document published prior to the international filing date but later than the priority date claimed																					
Date of the actual completion of the international search 23 August 1999		Date of mailing of the international search report 10 SEP 1999																				
Name and mailing address of the ISA/AU AUSTRALIAN PATENT OFFICE PO BOX 200 WODEN ACT 2606 AUSTRALIA Facsimile No.: (02) 6285 3929		Authorized officer  JAMES WILLIAMS Telephone No.: (02) 6283																				

**INTERNATIONAL SEARCH REPORT**  
Information on patent family members

International application No.  
**PCT/AU 99/00646**

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member					
US	5 610 970	EP	502104	JP	5505285	WO	9107838
US	5 592 541	-	-				

END OF ANNEX